

**STABILIZATION OF WIPES, PADS AND APPLICATORS IN CONJUNCTION  
WITH FLEXIBLE AND NON-FLEXIBLE BARRIER PACKAGING****PRIORITY INFORMATION**

**[0001]** This application relates to and claims priority from Provisional Application No. 60/392,644 filed June 29, 2002.

**BACKGROUND OF THE INVENTION****Field of the Invention**

**[0002]** The present invention relates to wipes, pads and applicators in general, and to machine production systems and the configuration of structures to stabilize or adhere wipes, pads or applicators before or after impregnation by formularies and substances to flexible and non-flexible barriers especially concerning the use of packaging as a non-permeable barrier. The packaging acts as a barrier by reducing or eliminating the migration of unwanted substances contained or absorbed in the wipes, pads or applicators from contacting the skin of the user of said impregnated wipes, pads or applicators.

**Description of the Related Art**

**[0003]** Various types of wipes, pads and applicators are available in the marketplace. Such wipes, pads and applicators are used for the application of a variety of formularies, such as lotions, sunscreen, insect repellents, and cleaning fluids. These wipes are typically marketed as an alternative means to distribute a formulary of the particular company marketing the wipe. For instance, an insect repellent company having a proprietary insect repellent may market an insect repellent wipe, a suntan lotion company may market a suntan lotion wipe, and a cleaning fluid company may market a cleaning fluid wipe. For the purpose of applying a selected formulary to a surface, a material is impregnated with the selected formulary. The material impregnated with the formulary constitutes the wipe, pad

or applicator. The wipe, pad or applicator is then packaged for user convenience and to protect the wipe, pad or applicator for example, from evaporation or contamination, or both

**[0004]** Numerous formularies that generally should not come in contact with the user's skin could exploit the growing consumer marketplace for disposable wipes if the packaging that the impregnated wipe, pad or applicator is contained in could act as a stable barrier to protect the user's skin as opposed to using a glove or some other form of barrier protection to apply the formulary. U.S. Patent 6,305,531B1 and U.S. Published Patent Application 200301068812 depict systems and methods for the use of packaging as a transdermal barrier. For the purposes of stabilizing or adhering the wipe, pad or applicator in conjunction with the packaging barrier, packaging machine systems and stabilization techniques are required for high speed cost efficient production.

#### SUMMARY OF THE INVENTION

**[0005]** In order to eliminate repetition in the following text, wipes, pads and applicators are deemed to be one in the same for the dispensing of formulary and thus will be described as impregnated wipes for simplicity. With the increasing popularity of the use of impregnated wipes for the convenient application of formularies, numerous products developed by companies have not been marketed for use as impregnated wipes. One reason for this unavailability of formularies in impregnated wipes appears to be the high probability of transdermal migration of the formulary contained in the impregnated wipe through the skin of the user's hand or body parts when in contact with the impregnated wipe. Certain formularies should not come in contact with the skin including products that are toxic, could discolor the skin, have undesirable odors or may leave the user's skin in a condition that the user may not like.

**[0006]** Additionally, some pharmaceutical products should only be applied to a limited area of the body and transdermal migration through the user's skin might constitute an overdose of the medication. Further, users of impregnated wipes may not want to receive any formulary on their skin or hand when applying formulary to surfaces other than their own body or to discrete areas of their own bodies

**[0007]** Another reason for the lack of certain formularies in impregnated wipes appears to be because the processes for the packaging surrounding the impregnated wipe have not addressed the user's need for a secure way to grip or hold the impregnated wipe and additionally prevent transdermal migration.

**[0008]** There are many different impregnated wipes available. Typically, impregnated wipes are pulled out of a bulk container or removed from a single use package prior to usage. The user's skin (hand) will come in contact with the formulary impregnated into the wipe. Additionally, the way that impregnated wipes are delivered to consumers and businesses, in the marketplace, has limited their usage in conjunction with formularies that stain, have undesirable smell or texture, or might present toxic exposure. Examples of known formularies that user's may not want in contact with their skin include: shoe polish, stains, paints, solvents, lubricants, pharmaceuticals and any potential toxic substance.

**[0009]** Based on the foregoing, consumers and businesses are in need of a way to exploit the convenience and portability of impregnated wipes in accordance with formularies that are undesirable when in contact with the user's skin. Accordingly, the present invention involves an innovative approach to improving methods, systems and processes for packaging machines and impregnated wipe materials to prevent the unwanted migration of formulary from the impregnated wipe to the user's skin.

**[0010]** One aspect of the invention involves a packaging machine comprising a base frame having an input side and an output side and a transport path from the input side to the output side providing a continuous primary field of packaging material, a drive means for advancing said primary packaging layer from the input side to the output side of said machine in precise increments, a fusion station to stabilize or adhere an individual or plurality of wipes, pads or applicators placed on the primary packaging field in specific locations in succession along the transport path of the primary packaging layer, a secondary field of packaging material to be positioned on the wipes, pads or applicators after fusion, a sealing station to seal the primary and secondary packaging layers enclosing the wipes, pad or applicators to prevent contamination from the outside environment along with an integrated cutting station to trim the finished packages to size.

**[0011]** A second aspect of the invention involves a packaging machine comprising a base frame having an input side and an output side and a transport path from the input side to the output side providing a continuous primary field of packaging material, a drive means for advancing said primary packaging layer from the input side to the output side of said machine in precise increments, a fusion station to stabilize or adhere an individual or plurality of wipes, pads or applicators placed on the primary packaging field in specific locations in succession along the transport path of the primary packaging layer, a dosing station to dispense formularies onto the wipes, pads or applicators in a metered fashion, a secondary field of packaging material to be positioned on the wipes, pads or applicators after fusion and dosing, a sealing station to seal the primary and secondary packaging layers enclosing the dosed wipes, pad or applicators to prevent contamination, evaporation and loss of formulary along with an integrated cutting station to trim the finished packages to size.

**[0012]** Another aspect of the invention involves a packaging machine comprising a base frame having an input side and an output side and a transport path from the input side to the output side providing a continuous primary field of packaging material, a drive means for advancing said primary packaging layer from the input side to the output side of said machine in precise increments, a fusion station to stabilize or adhere an individual or plurality of wipes, pads or applicators placed on the primary packaging field in specific locations in succession along the transport path of the primary packaging layer, a secondary field of packaging material to be positioned on the wipes, pads or applicators after fusion, a sealing station to seal the primary and secondary packaging layers enclosing the wipes, pad or applicators to prevent contamination from the outside environment, a third packaging layer to be applied to the primary packaging layer to provide handles, pockets, attachments or even coupons of the like, along with an integrated cutting station to trim the finished packages to size.

**[0013]** Another aspect of the invention involves a packaging machine comprising a base frame having an input side and an output side and a transport path from the input side to the output side providing a continuous primary field of packaging material, a drive means for advancing said primary packaging layer from the input side to the output side of said

machine in precise increments, a forming station to create a cavity, pocket or moat whereby the pre-cut wipes, pads and applicators may be set into specific locations on the primary packaging field, a fusion station to stabilize or adhere an individual or plurality of wipes, pads or applicators placed on the primary packaging field in specific locations in succession along the transport path of the primary packaging layer, a secondary field of packaging material to be positioned on the wipes, pads or applicators after fusion, a sealing station to seal the primary and secondary packaging layers enclosing the wipes, pad or applicators to prevent contamination from the outside environment along with an integrated cutting station to trim the finished packages to size.

**[0014]** Still another aspect of the invention involves a packaging machine comprising a base frame having an input side and an output side and a transport path from the input side to the output side providing a continuous primary field of packaging material, a drive means for advancing said primary packaging layer from the input side to the output side of said machine in precise increments, a converting station to cut and place wipes, pads and applicators on specific locations on the primary packaging layer, a fusion station to stabilize or adhere an individual or plurality of wipes, pads or applicators placed on the primary packaging field in specific locations in succession along the transport path of the primary packaging layer, a secondary field of packaging material to be positioned on the wipes, pads or applicators after fusion, a sealing station to seal the primary and secondary packaging layers enclosing the wipes, pad or applicators to prevent contamination from the outside environment along with an integrated cutting station to trim the finished packages to size.

**[0015]** Yet another aspect of the invention involves a packaging machine comprising a base frame having an input side and an output side and a transport path from the input side to the output side providing a continuous primary field of packaging material, a drive means for advancing said primary packaging layer from the input side to the output side of said machine in precise increments, a fusion station to stabilize or adhere an individual or plurality of wipes, pads or applicators placed on the primary packaging field in specific locations in succession along the transport path of the primary packaging layer, a secondary field of packaging material to be positioned on the wipes, pads or applicators after

fusion, a sealing station to seal the primary and secondary packaging layers enclosing the wipes, pad or applicators to prevent contamination from the outside environment, a printing station to print onto any packaging layer specific information within the transport path along with an integrated cutting station to trim the finished packages to size.

**[0016]** A wipe, pad or applicator produced in accordance with the described packaging machine and with certain embodiments significantly reduces and or eliminates the transdermal migration of unwanted formulary from the impregnated wipe to the user's skin. A non-permeable barrier exists between the user's skin and the impregnated wipe providing a new improved way to exploit the convenience of impregnated wipes for a greater variety of formularies. For example, the non-permeable barrier is a part of the impregnated wipe packaging or included on one side of the impregnated wipe material.

**[0017]** A wipe, pad or applicator in accordance with certain embodiments has the advantage of improving the ability of the packaging to stabilize the location or grip, in the user's hand, of the impregnated wipe while using it to apply the formulary.

**[0018]** Preferably, one layer of the packaging may be removed from the second layer to expose the impregnated wipe, pad or applicator's surface for application of the formulary. The exposed impregnated wipe, pad or applicator is attached to the second layer by a variety of techniques that are known in the art. The second layer acts as the non-permeable membrane between the impregnated wipe and the user's hand (skin). The third layer is attached to the second layer forming a pocket for the insertion of the user's finger(s) or hand.

**[0019]** Using any of the herein described methods to manufacture the wipe, pad or applicator, one will be able to secure the finger(s) or hand to the impregnated wipe, pad or applicator, the active formulary surface may be exposed by separating the edges of the impregnated wipe, pad, or applicator maintaining the hand or fingers to the non-permeable coating of the impregnated wipe, pad or applicator by die-cut hole, strap or adhesive and effectively applying the wipe, pad or applicator formulary without causing transdermal migration.

**[0020]** For summarizing the invention, certain aspects, advantages, and novel features of the invention are described herein. It is to be understood that not necessarily all

such advantages may be achieved in accordance with any particular embodiment of the invention. Thus, for example, those skilled in the art will recognize that the invention may be embodied or carried out in a manner that achieves one advantage or group of advantages as taught herein without necessarily achieving other advantages as may be taught or suggested herein. Further, those skilled in the art will also recognize that the machine configuration may be presented in vertical, horizontal or any angular alignment to meet the criteria of the manufacturing environment.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0021]** The present invention is described in more detail below in connection with the attached drawings, which are meant to illustrate and not limit the invention, and in which:

- [0022]** Figure 1 is a side view of a first embodiment of the packaging machine;
- [0023]** Figure 2 is a side view of a second embodiment corresponding to Figure 1;
- [0024]** Figure 3 is a side view of a third embodiment corresponding to Figure 1;
- [0025]** Figure 4 is a side view of a fourth embodiment corresponding to Figure 1;
- [0026]** Figure 5 is a side view of a fifth embodiment corresponding to Figure 1;
- [0027]** Figure 6 is a side view of a sixth embodiment corresponding to Figure 1;
- [0028]** Figure 7 is a side view of a seventh embodiment corresponding to Figure 1;

**[0029]** Figure 8 is a top view of a packaging layer pulled forward by gripper means corresponding to Figure 1;

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

**[0030]** To facilitate a complete understanding of various embodiments of the invention, the remainder of the detailed description describes exemplary embodiments with reference to the drawings, wherein like elements are referenced with like numerals throughout.

**[0031]** As shown in Figure 1 the packaging machine comprises a base frame with an input side 101 and an output side 202. A plurality of wipes, pads or applicators 5 are

conveyed along the base frame from the input side to the output side. The base frame comprises, on each side transversely to or laterally of the advancement or forward feed direction a transport drive means 7 extending from the input side to the output side and, in a closed path from the output side in the upper region down to the lower region of the base frame, following to the input side and from the input side back to the upper region of the base frame. A primary packaging field 1 is located at the input side of the base frame 101 and is moved forward to the output side 202 on the transport drive by a gripper means.

As wipes, pads or applicators 5 are placed on the primary packaging field 1, they next move forward coming in contact with a fusion station 3 whereby pressure, heat or adhesive or a combination thereof can be applied differentially to adhere the wipe, pad or applicator to the primary packaging field 1. After exiting the fusion station 3 and traveling forward in the direction of the output side 202, the adhered wipe, pad or applicator 5 moves toward to the secondary field of packaging 2. After the secondary packaging field 2 moves over the adhered wipe, pad or applicator 5, a pressure sealing die 4 seals the secondary packaging field 2 to the perimeter of the primary packaging field 1 forming a hermetic seal to protect the wipe, pad or applicator 5 from outside environmental contamination. Formed die sealing techniques are well known by those skilled in the prior art. After perimeter sealing of the formed package, cutting occurs to complete the package at the sealing die 4. The completed package 6 then moves forward on the transport drive and exits the output side 202 of the base frame.

**[0032]** Figure 2 comprises a variation of the packaging machine described in Figure 1 whereby a dosing station 9 is placed following the fusion station 3 and closer to the output side 202 of the base frame. Placing the dosing station 9 after fusion of the wipe, pad or applicator 5 occurs in fusion station 3, insures that the formulary dispensed from the dosing machine 9 and intended to impregnate the wipe, pad or applicator 5 will not interfere with the adhesion of the wipe, pad or applicator 5. Liquid dispensing and dosing machines are well known by those skilled in the prior art.

**[0033]** An alternative configuration of the packaging machine depicted in Figure 1 is illustrated in Figure 3. In this configuration, a third packaging field 10 is installed under

the base frame to provide handles, pockets, straps or even coupons which are adhered to the back side of the primary packaging field 1 of the formed package 6 with a sealing die.

[0034] Figure 4 illustrates an alternative embodiment of the packaging machine described in Figure 1 whereby a forming station 11 is installed on the base frame to create cavities, depressions or moats to advantageously receive converted wipes, pads or applicators 5 and any formulary which may be dispensed onto them. Vacuum cavity and pressure forming systems are well known by those skilled in the prior art.

[0035] Another variation of the packaging machine depicted in Figure 1 is shown in Figure 5 and includes a material converter station 12 located at the input side 101 of the base frame. Integrated conversion of the wipe, pad or applicator materials 5 at the packaging machine may have significant cost savings in high speed production runs.

[0036] Figure 6 illustrates yet another embodiment of the packaging machine depicted in Figure 1 whereby an inline printing station 13 is placed on the base frame to print onto any of the three possible packaging fields information within the transport path.

[0037] Figure 7 illustrates another variation of the packaging machine depicted in Figure 1 whereby a cutting station 14 is located near the output side 202 of the base frame to facilitate high speed cutting and finishing of the formed packages 6.

[0038] Figure 8 depicts packaging gripper means 16 which pull the packaging field 1 on the transport path 7 adjacent to the base frame toward the output side 202 with a plurality of wipes, pads or applicators 5 located at precise positions on the packaging field 1 before or after entering the fusion station 3.

[0039] For summarizing the invention, certain aspects, advantages, and novel features of the invention are described herein. It is to be understood that not necessarily all such advantages may be achieved in accordance with any particular embodiment of the invention. Thus, for example, those skilled in the art will recognize that the invention may be embodied or carried out in a manner that achieves one advantage or group of advantages as taught herein without necessarily achieving other advantages as may be taught or suggested herein.

[0040] Although this invention has been disclosed in the context of certain preferred embodiments and examples, it will be understood by those skilled in the art that the

present invention extends beyond the specifically disclosed embodiments to other alternative embodiments and/or uses of the invention. Thus, it is intended that the scope of the present invention herein disclosed should not be limited by the particular disclosed embodiments described above, but should be determined only by a fair reading of the claims that follow.